No. 713,883. Patented Nov. 18, 1902.

W. H. HOLLAR.

SAFE.

(Application filed Feb. 4, 1902.)

(No Model.) 2 Sheets—Sheet 1.

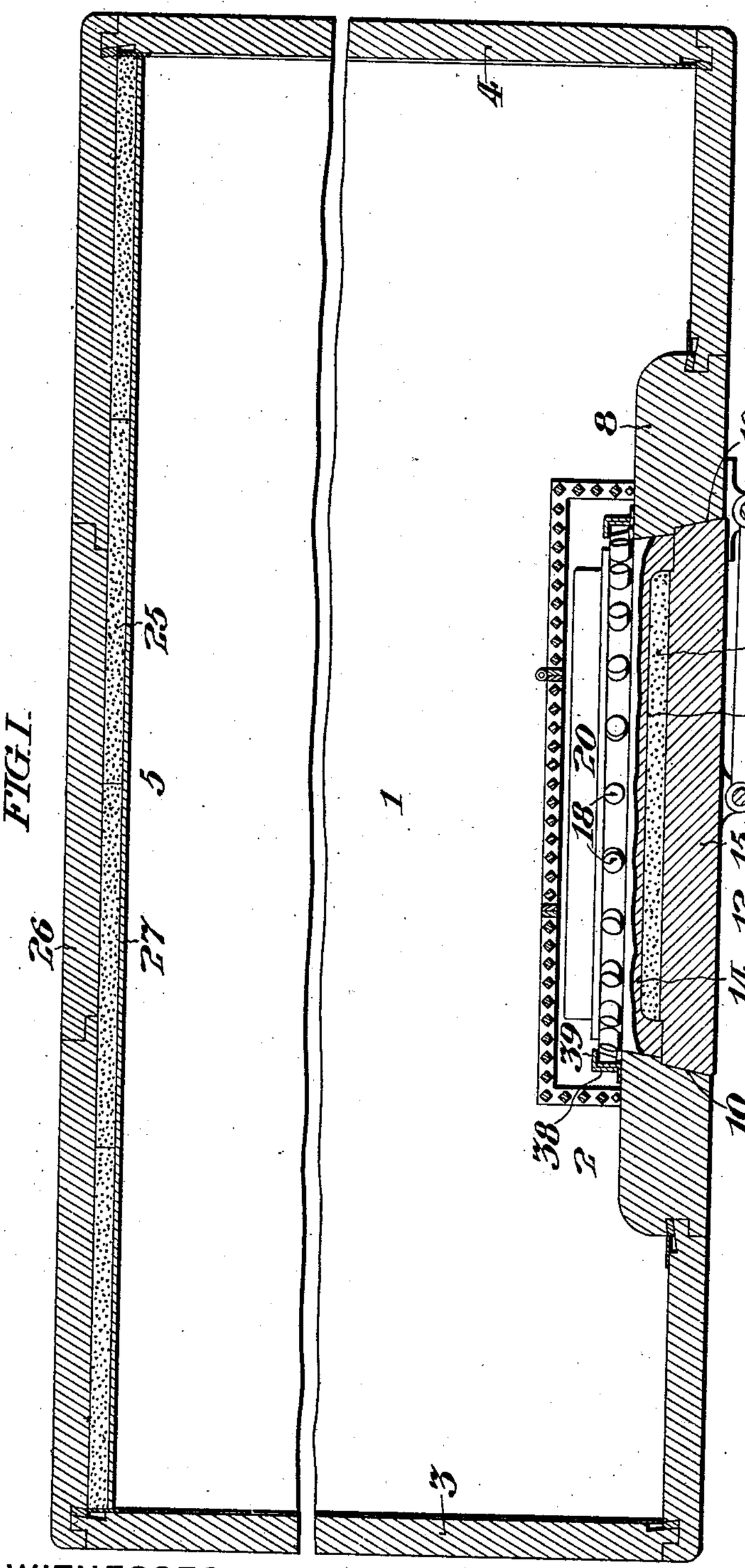

FIG. I.

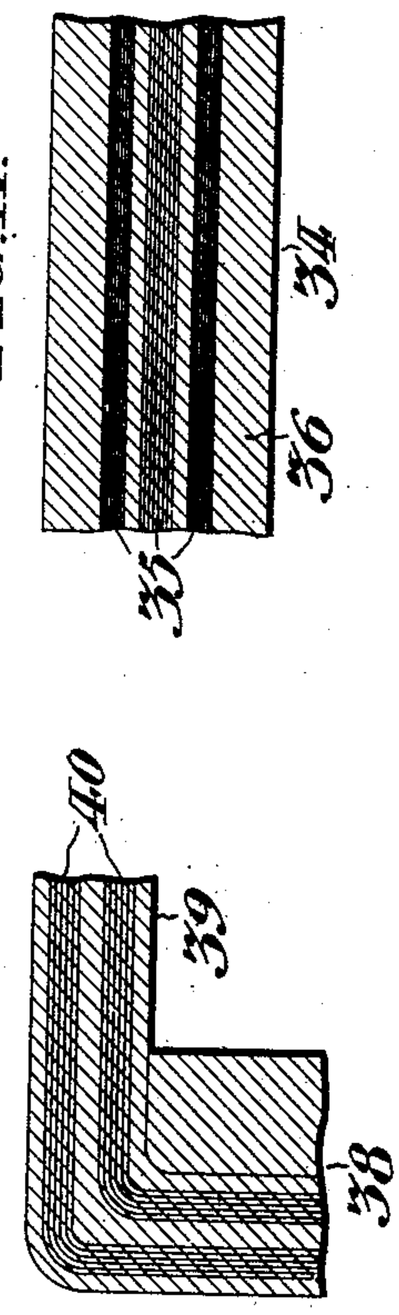

FIG. II. FIG. III. FIG. IV. FIG. V.

WITNESSES:

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Edward Rittenhouse

INVENTOR:

WILLIAM H. HOLLAR,

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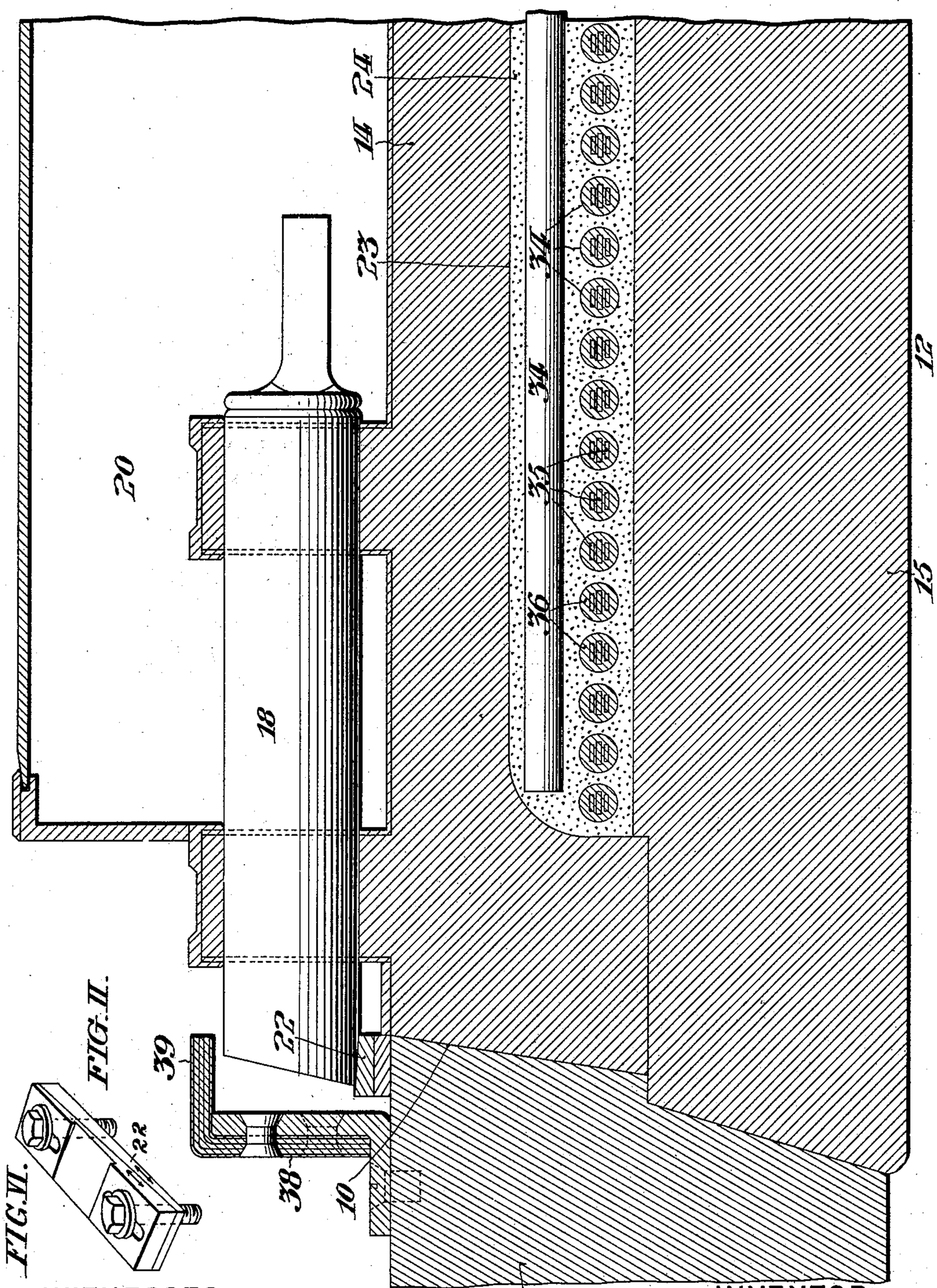

FIG. II.

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UNITED STATES PATENT OFFICE.

WILLIAM H. HOLLAR, OF PHILADELPHIA, PENNSYLVANIA.

SAFE.

SPECIFICATION forming part of Letters Patent No. 713,883, dated November 18, 1902.

Application filed February 4, 1902. Serial No. 92,502. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. HOLLAR, of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Safes, whereof the following is a specification, reference being had to the accompanying drawings.

It is the object of my invention to prevent successful attack upon the walls or doors of burglar-proof safes. Successful attack upon such structures is usually accomplished by making an opening through the wall or door thereof in the region of the locking mechanism and releasing the latter by implements inserted through the opening. Openings for the purpose specified may be formed in an ordinary safe structure either by the passage of a diamond-pointed drill or by the passage of an electric current of such nature as to fuse the metal comprising the wall or door. To obviate the danger aforesaid, I provide the wall or door of a safe or vault with a slab or slabs interposed between the inner and outer metallic plates thereof and consisting of a mass of material which is not only refractory and of low-heat conductivity, but which is also a non-conductor of electricity and capable of resisting in the highest degree the successful use of drills or similar tools. The shield-slabs hereinafter described comprise corundum, silicid of carbon, or like material characterized by extreme hardness and resistance to the passage of electric current.

My invention comprehends the various novel features of construction and arrangement hereinafter more definitely specified and claimed.

In the accompanying drawings, Figure I is a plan sectional view of a safe or vault embodying my improvements. Fig. II is a fragmentary sectional view of a safe door and wall embodying my improvements. Fig. III is a sectional view showing the detailed construction of the guard-ring indicated in Figs. I and II. Figs. IV and V are respectively longitudinal and transverse sectional views of the reinforcing-rods shown in Fig. II. Fig. VI is a perspective view of one of the adjustable wedge-seats for the locking-bolts.

Referring to Fig. I, 1 is the safe or vault, comprising the front wall 2, side walls 3 and 4, and rear wall 5, which are conveniently formed of interlocked armor-plates. The central plate 8 in the front wall 2 is preferably formed of greater thickness than the remainder of the walls and embodies the door-aperture 10. The door 12 is fitted to said aperture 10 and is conveniently connected with the wall 2 by the hinge 13. Said door 12 comprises the inner plate 14 and the outer plate 15. The lock mechanism by which the door is secured in closed position is mounted upon said inner plate 14 and comprises the bolts 18, provided with suitable automatic operating mechanism inclosed by the casing 20, whereby when the door is in closed position said bolts 18 are projected and overlap said door-aperture 10, at the inner face thereof, as shown in Figs. I and II. The free extremities of said bolts 18 are seated in locked position upon the wedges 22, which are adjustably secured upon the wall 2 at the margin of said door-opening 10. The inner and outer plates 14 and 15 of the door 12 inclose the recess 23, which is coextensive with the region of the lock mechanism most susceptible to attack, and said plates form a supporting structure for the shield 24, which is seated in said recess. Said shield preferably consists of a coherent slab of material comprising granules of corundum, crystals of silicid of carbon, or similar non-metallic elements characterized by extreme hardness and consequent capacity for resisting in the highest degree the passage of diamond-pointed drills or similar tools. Moreover, said material being a non-conductor of electricity prevents the passage of any electric current which may be applied with a view to perforating the safe-walls by fusion.

It is to be understood that shields of the character specified may be embodied in any portion of the safe which it is desired to render proof against successful attack by drill or by electric current. For instance, the rear wall 5 (shown in Fig. I) comprises the outer plate 26 and the inner plate 27, which form a supporting structure for the shields 25. It is to be understood that said shields 24 may be formed as coherent slab elements of the safe-wall entirely independent of any reinforcing or supporting metallic members thereof. However, I find it convenient to reinforce said shields by embedding in the mass thereof reinforcing plates or pieces—for in-

stance, the rods 34, which are preferably arranged in latticed relation, as shown in Fig. II. I have found that said rods offer the greatest impediment to the passage of a drill or similar tool when formed of cores of laminated steel 35, embedded in sheaths of soft iron 36, as shown in Figs. IV and V.

Of course an opening may be made through any region of the safe-wall which is unprotected by the shield elements above described, and such an opening affords the possibility of releasing the lock-bolts 18 by pressure upon their free extremities. To guard against the latter danger, I provide the guard-ring 38, which is fixed upon the wall 2, adjoining the door-opening 10, and comprises the flange 39, which overhangs the free extremities of the bolts 18. Said guard-ring is conveniently made of wrought-steel and, as best shown in Fig. III, said flange member thereof preferably comprises laminated hard steel plates 40.

Although I have shown my improvements applied to a safe-door of circular form, provided with radial lock-bolts, it is to be understood that I do not desire to limit myself to the particular embodiment of my invention specified, as it is obvious that various modifications may be made therein without departing from the essential features of my invention.

I claim—

1. In a safe, the combination with a supporting structure comprising inner and outer metallic plates; of a mass of electrical resistance material between said plates, comprising particles of silicid of carbon, substantially as set forth.

2. In a safe, the combination with a supporting structure comprising inner and outer metallic plates; of a coherent slab of refractory electrical resistance material between said plates, comprising non-metallic elements of extreme hardness; and reinforcing metallic members embedded in said slab, and comprising laminated cores of steel in sheaths of iron, substantially as set forth.

3. In a safe; the combination with a supporting structure comprising inner and outer metallic plates; of a mass of electrical resistance material between said plates, comprising non-metallic elements harder than steel, substantially as set forth.

4. In a safe, the combination with a supporting structure comprising inner and outer metallic plates; of a mass of refractory electrical resistance material between said plates, comprising non-metallic elements harder than steel, substantially as set forth.

5. In a safe, the combination with a supporting structure comprising inner and outer metallic plates; of a series of distinct slabs of refractory electrical resistance material between said plates, each slab comprising non-metallic elements harder than steel; and, reinforcing metallic members embedded in said slabs, substantially as set forth.

In testimony whereof I have hereunto signed my name, at Philadelphia, Pennsylvania, this 3d day of February, 1902.

WILLIAM H. HOLLAR.

Witnesses:
ARTHUR E. PAIGE,
E. L. FULLERTON.